No. 827,609. PATENTED JULY 31, 1906.

J. M. BOYD.

ELEVATOR AND CARRIER.

APPLICATION FILED DEC. 23, 1901.

2 SHEETS—SHEET 1.

FIG. 1.

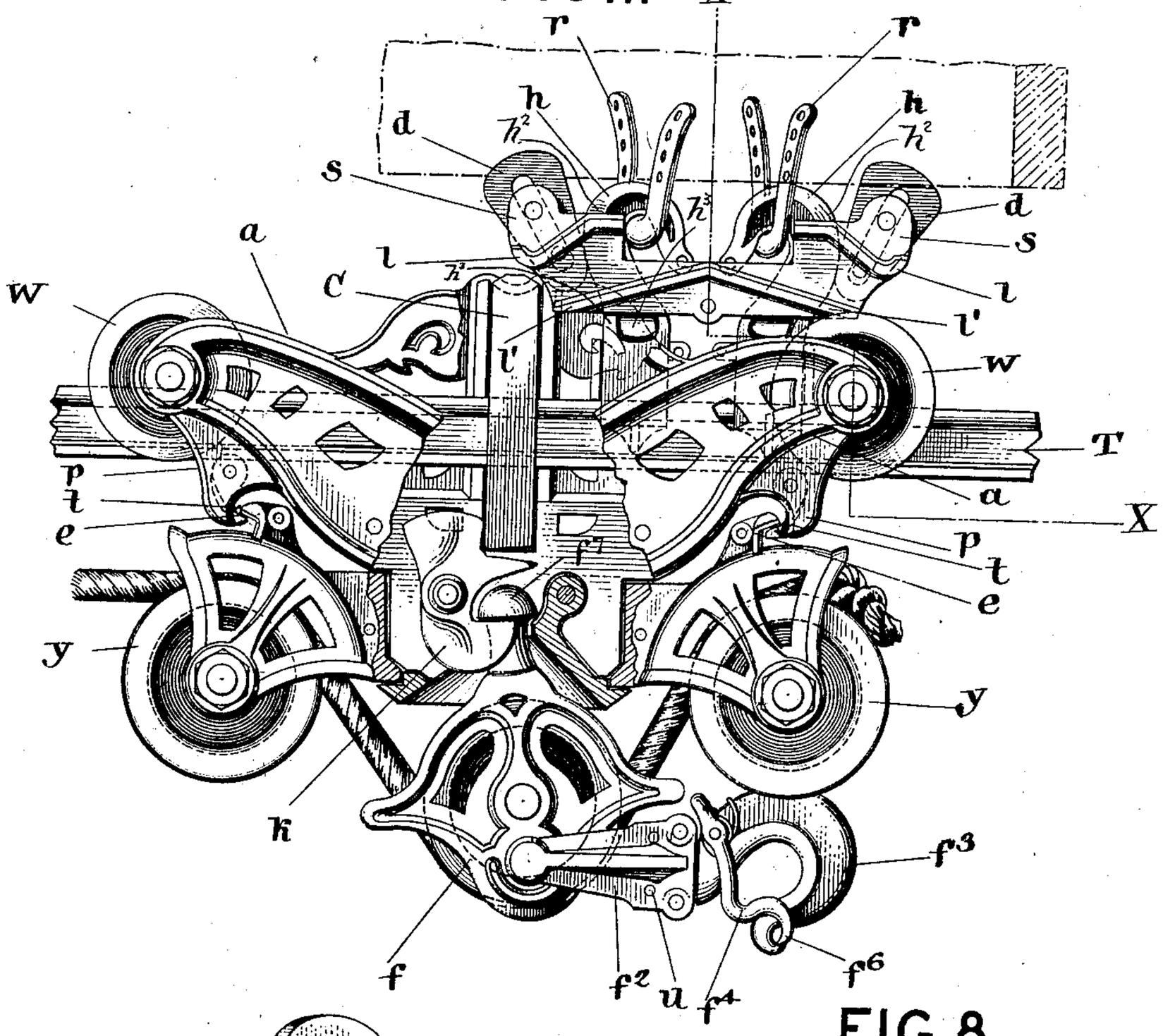
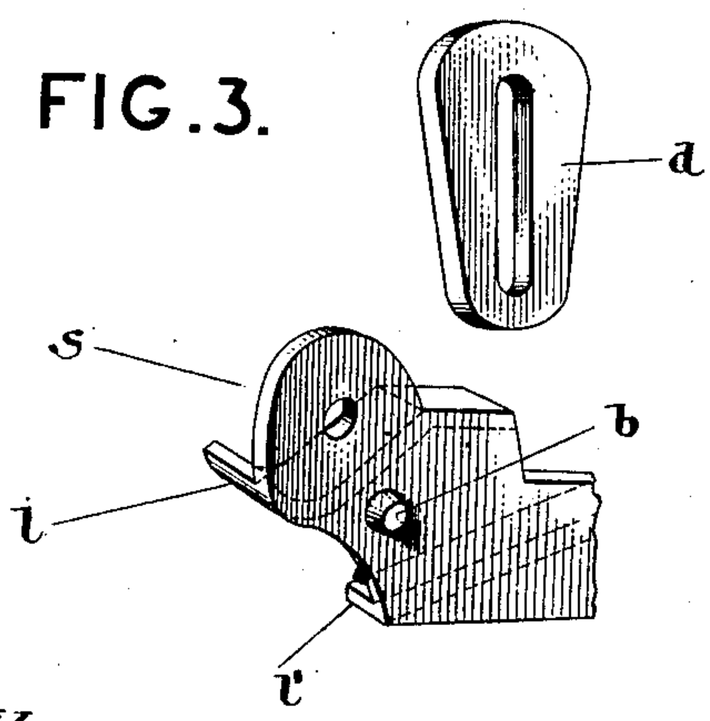
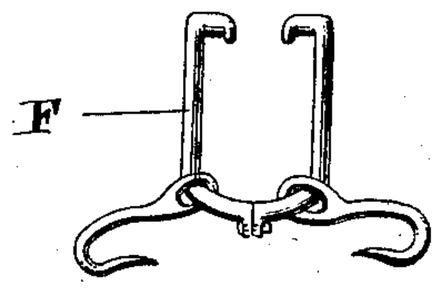


FIG. 8.

FIG. 3.





Witnesses,
A. J. Ricker.
Helmus B. Wells,

Inventor,
John M. Boyd.

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2 SHEETS—SHEET 2.

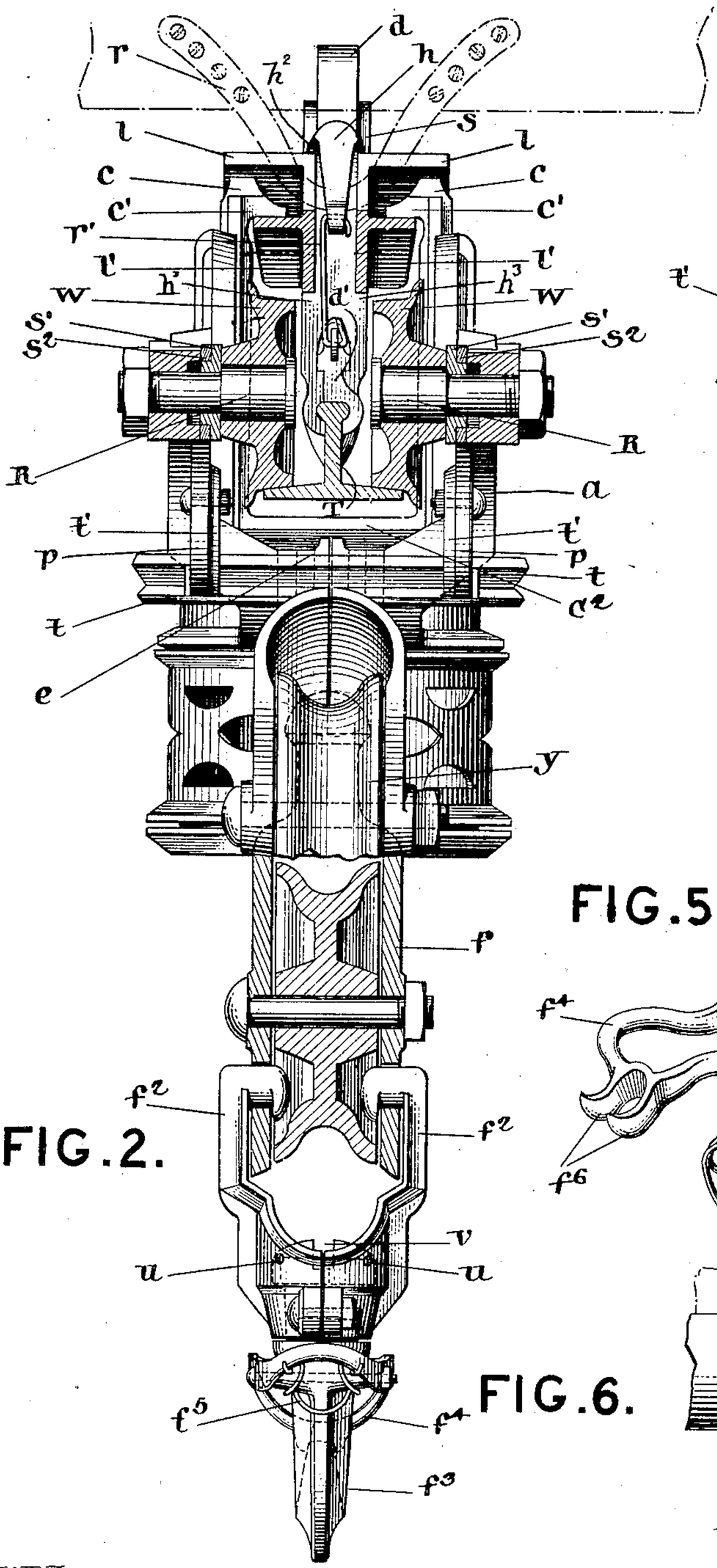


FIG. 2.

FIG. 7.

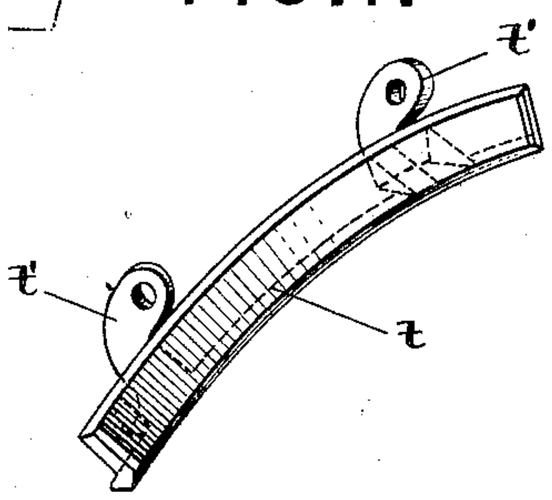


FIG. 4.

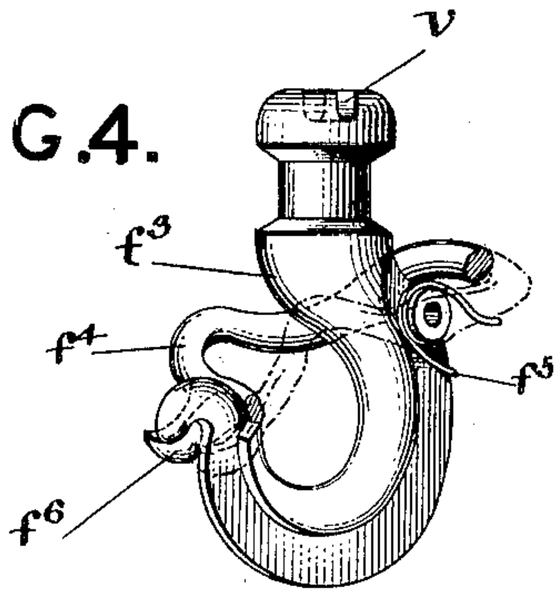
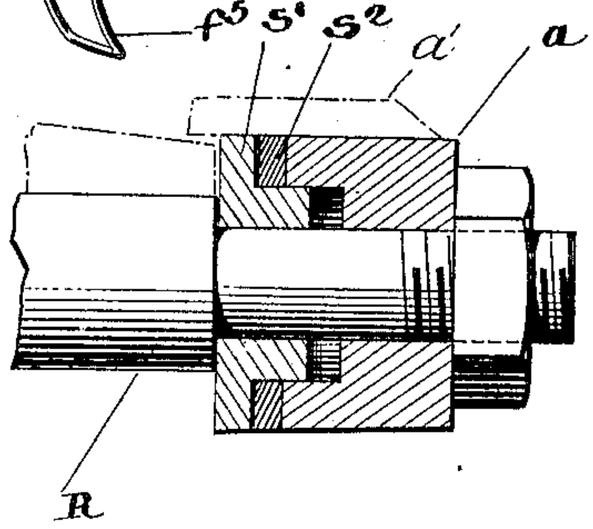


FIG. 5.

FIG. 6.



Witnesses,
A. J. Ricker
Helmus B. Wells.

Inventor;
John M. Boyd.

UNITED STATES PATENT OFFICE.

JOHN M. BOYD, OF FOND DU LAC, WISCONSIN.

ELEVATOR AND CARRIER.

No. 827,609. Specification of Letters Patent. Patented July 31, 1906.

Application filed December 23, 1901. Serial No. 87,029.

To all whom it may concern:

Be it known that I, JOHN M. BOYD, a citizen of the United States, residing at Fond du Lac, in the county of Fond du Lac and State of Wisconsin, have invented certain new and useful Improvements in Elevators and Carriers, of which the following is a specification.

My invention relates to improvements in elevators and carriers adapted to run upon a track suspended in the peak of a barn or in other places where it is desired to elevate hay or other material and to deliver it at different points along underneath the track, and has for its object to provide an apparatus of simple, strong, and durable construction, easily and quickly put up and secured in place, and sure, safe, and easy in operation, whereby the handling of the hay or other material may be greatly facilitated and whereby the same may be filled in close up to the peak of the rafters or other point from which the track is suspended easily and quickly without the straining and cramping of the track and carrier as ordinarily constructed; and it consists in the improved construction, combination, and arrangement of the various parts, substantially as shown in the drawings and pointed out in the claims.

In the accompanying drawings, in which similar letters of reference indicate corresponding parts, Figure 1 is a side elevation of the elevator and carrier and track, part of one side of the carrier being broken away to show the interior parts. Fig. 2 is an end view of the carrier and track with one of its supporting hanger-hooks, partly in section on line *x x* of Fig. 1, and showing the upper pulley partly broken away to show the fork or trip pulley and its frame, also partly in section. Fig. 3 is a detail view of one end of one side of the stop or trip block for the carrier and of the adjusting-wedge or cam for same. Fig. 4 is a detail view of the hook to be attached to the fork or trip pulley, as in Figs. 1 and 2. Fig. 5 is a view of the closing-link for said hook and of the spring for holding the same in a closed position. Fig. 6 is a detail view, partly in section, of means for adjusting the journals of the wheels endwise. Fig. 7 is a detail view of the cross-tie or end support in the carrier-frame; and Fig. 8 is a detail view of means for connecting two hooks instead of one to the fork-pulley when desired, &c., as hereinafter pointed out.

In the drawings, *r r* represent the rafter-brackets adapted to be attached to the rafters or other supports in the ordinary manner.

h h are the hanger-hooks or track-hangers adapted to be hooked into the rafter-brackets *r r* or other support, as in Figs. 1 and 2, to support the rail or track and allow it to swing sidewise in the usual manner, said track being preferably formed, as shown, of a single rail T, provided with lower side flanges for the wheels of the carrier to run upon and an upper bead whereby it may be suspended by the said hanging hooks *h h*, (though other styles of track-rail provided with suitable bearings for the wheels and means for support may also be used.)

s is the stop or trip block of the carrier, being preferably formed in two sides or plates to be bolted on opposite sides of said track-hangers, the upper central part of said stop-block being cut away to allow the rafter-brackets to pass through and to allow said stop to be adjusted endwise according to the width or thickness of the rafters and in line with the hanging hooks, said rafter-brackets and hangers being attached to both sides of the rafters at the point where the stop is attached and adjusting cams or wedges *d d*, Figs. 1, 2, and 3, being placed between the ends of the sides or plates of the stop and held in place by the bolts passing through the ends of said stop and by the guide-lugs *b*, Fig. 3, on the inner sides of the ends of the sides or plates of the stop projecting into the slot formed in said adjusting cam or wedge to allow it to be adjusted up and down to provide for rafters of different thickness and allow it to bear against the back of the hangers, as in Figs. 1 and 2, to hold against the endwise strain on the stop, said sides of the stop being also held together by a bolt passing through the center of said sides near the lower edge between the hangers, if desired, said hangers being preferably formed with lateral extensions, lugs, or guides h^2 h^3 to support said stop, as in Figs. 1 and 2. (See also divisional application for suspended track, filed May 20, 1903, Serial No. 158,010.) By this arrangement it will be seen the strain on the stop-block is thrown up against the rafters instead of leaving it on the track, as ordinarily constructed, where the stop-block is attached to the track, and being up against the top of the hangers next to the rafters it also saves considerable strain or leverage on the hangers and allows the carrier-wheels *w w* to pass underneath the side

extensions or inclines of the stop without the construction of a web or extension to hold said stop up from the track and the body of the carrier to be brought up close underneath the rail or track, no space being required for a stop underneath the track. This stop-block *s* is also provided with guide-lugs or inclines *l l'* on each side adapted to engage with inwardly-projecting lugs *c'* on the upper end of a bifurcated catch-block *c*, preferably sliding vertically up and down in guideways formed in the carrier-frame, the sides of said catch projecting up each side of the rail or track, as shown, and the lower end or cross-piece c^2, Fig. 2, engaging with a grapple-hook *k*, Fig. 1, dropping in front of an upper extension of said hook and locking it to the head or trip f^7 of the fork-pulley or trip-pulley frame *f*, as in Fig. 1, when the carrier is released from the stop and being locked or held up against the upper lugs or inclines *l l* of the stop by said upper extension of said grapple-hook *k* when in engagement with the stop, said catch *c* being raised up by the lower or long inclines *l' l'* of the stop engaging with the inwardly-projecting lugs *c' c'*, Fig. 2, at the upper end of the catch as the carrier approaches the stop from either direction, thus releasing the grapple-hook *k*, which tips forward by its own gravity underneath said catch or is pulled over by the weight of the fork-pulley frame *f* and tackle, thus locking said catch up between the upper lugs or inclines *l l* of the stop (similar to the device shown in my former patent, No. 300,687, and now in quite general use) and holding it up in engagement with either of these upper lugs, according to the direction of the strain or pull upon the draft-rope, while the load is being elevated (the device being adapted to work equally well in either direction from the stop) until the head or trip f^7 of the fork-pulley *f* enters the carrier and drives the hook *k* back into its former position, as in Fig. 1, thus releasing said catch *c*, when said catch will drop down, or the force of the draft against the inclined faces of the upper lugs of the stop will force it down in front of the upper extension of said grapple-hook, thus locking said hook as heretofore, and the elongated or lower outer upturned extensions of said upper lugs *l l* will prevent the catch rebounding or springing up as its lower end is suddenly pinched by the upper end or extension of the hook as the carrier leaves the stop and the load comes on said hook, especially when worked very quickly.

y y are the rope or guide pulleys, which are carried on a collar or band swiveled around the lower part of the main frame or body of the carrier in the usual manner, as shown partly in section in Fig. 1, and provided with upper supports, slides, or bearings *e e* above the pulleys, adapted to bear against and slide upon cross-ties or end supports *t t*, Figs. 1, 2, and 7, preferably formed with upper extensions *t' t'*, by which they are bolted to downwardly-extending supports or hangers *p p* at the ends of each side of the carrier-frame *a a*, thus forming a cross-tie for and connecting the ends of said carrier-frame and also forming an end support for the pulley-frame or collar, as will be understood, and greatly strengthening the carrier, said cross-tie *t t* being preferably beveled at each end to receive the upper supports or bearings *e e* as the collar is turned around to change the direction in which the load is carried, or roller-bearings may be used in place of the slide-bearings *e e* if desired.

f is the fork-pulley or trip-pulley frame formed with a head f^7 or other form of trip at its upper end to engage the grapple-hook in the carrier in the usual manner, (or being otherwise adapted to trip the carrier as the load is raised;) but instead of attaching the hook or clevis which carries the load to a downward extension or loop of said frame in the usual manner I pivot said hook f^3 between the lower ends of two arms, hangers, or side links f^2, which in turn are also pivoted at their upper ends in bearings in the sides of the pulley-frame *f* at the sides of the sheave or pulley, preferably below its center and above its lower edge, as in Figs. 1 and 2, thus allowing the hook to swing out or fold up at one side of the pulley-frame, as in Fig. 1, and greatly save the strain and jerk or cramping and leverage on the carrier and pulley frames as the carrier starts off suddenly from the stop with its load after being tripped or when pulling hay into a mow nearly full, &c., as will be readily understood. The head of the hook f^3 is also provided with a slot or recess *v* across its top, (see Figs. 2 and 4,) and the arms or links f^2 are provided with holes *u u* to register with said slot or recess, (or when a rigid pulley-frame is used said holes may be provided in said frame, as will be understood) through which a small bolt or key may be passed when it is desired to use a stiff hook, as when a new rope is being used, to prevent twisting, said bolt or key being removed as the rope becomes more pliable and a swiveled hook is desired. A closing or safety link f^4 is also attached to the rear upper part of said hook, as shown in Figs. 1, 2, 4, and 5, and extends forward across the open part of said hook and rests upon a shoulder, rest, or guard provided near its point, as in Fig. 4, the sides of said link being curved outwardly and upwardly to allow it to be opened up against the arms, links, or hangers f^2 when desired to unhook from the fork, &c., and to provide a hook-shaped end to catch over the fork or sling-head, &c., and prevent its jumping out when said link is closed, although allowing said link to give or raise slightly as the fork or sling-head strikes it, said link being held flexibly in closed position by a spring f^5, so it

can be easily and quickly opened when desired to release from a fork or sling-head, &c., and, if desired, said link may also be provided with two outwardly and upwardly curved extensions or hooks f^6 f^6, as shown, which hooks drop one each side of the curved outer end or point of the hook f^3 as the link is closed, when a key may be inserted above said hooks f^6 f^6 and underneath said curved end of said hook f^3 to hold said link rigidly when desired, or these hooks f^6 f^6 may be omitted, if desired.

A modified form of the arms, links, or hangers f^2 is shown at F, Fig. 8, forming a sort of clevis which may be used in place of the links f^2 when it is desired to attach two hooks instead of one for use with a hay-sling, &c., or to attach directly to a fork-head or other article by passing said clevis through said fork-head, &c. (See also divisional application filed June 4, 1904, Serial No. 211,220.)

The above fork-pulley, with its hook and other attachments or parts, is also further shown, described, and claimed in my divisional application for Letters Patent for improvements in pulley-blocks, Serial No. 211,220, intended to be issued at same date as this, being a division of this application.

In Fig. 6 means are also shown whereby the journals of the traveling wheels may be adjusted endwise for tracks of different width, (as it may be desired to use the carrier on other styles of tracks already put up,) said journal R being provided with a shoulder to rest against a washer or bearing s', (or with a bushing in place of said shoulder,) said washer s' being formed with a boss or extension adapted to project into an opening or chamber formed inside the upper end of the arm or side a of the carrier, as shown in section in Figs. 2 and 6, other washers s^2 (also shown in section) of the desired thickness being inserted between the outer part of the washer s' and said arm or side a of the carrier around said boss when desired, and said journal R being provided with screw-threads and a nut or bur, (or other means in connection with the above,) whereby it may be adjusted and held rigidly in place, as will be understood. It is also evident to any one skilled in the art that these washers may be removed and a plain washer used next to the side or arm a of the carrier for the shoulder of the journal to bear against or that said shoulder may be allowed to enter into said opening or chamber in the arm a and a wheel with a shorter hub used, if desired, as will be readily understood, or said arm a may be formed with an extension (shown in dotted or broken lines a' in Fig. 6) above said washers to give them a better bearing, if necessary, said extension being high enough to allow the hub of the wheel (also shown in dotted or broken lines) to pass underneath it, and that other slight modifications may also be made.

The operation of the different parts and of the apparatus as a whole will be readily understood from the foregoing description.

It is also evident that the carrier may be adapted to run on a wood track, and that other modifications may also be made without departing from the spirit of my invention, and that different parts of the apparatus may be used in connection with machines or apparatus different in other respects and for other uses. I therefore wish it distinctly understood that I reserve to myself all such modifications, parts, and combinations as properly come within the scope of my invention and for all purposes for which they may be adapted and useful, having shown what I consider the most desirable form and combination of parts for the purposes set forth.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In an elevator and carrier in combination with the track or way, track-hangers adapted to support said track or way, and a stop or trip block formed in two pieces or plates adapted to be attached to the sides of the track-hangers, substantially as and for the purposes set forth.

2. In an elevator and carrier in combination with a track or way, traveling wheels adapted to travel on both sides of said track or way, suitable track-hangers, the stop-block for the carrier, and an overhead support, means whereby said stop-block may be attached at or near said overhead support for the track, and in line with the hangers to relieve said track from endwise strain while the load is being elevated, substantially as set forth.

3. In combination with an elevator and carrier provided with an open center between the traveling wheels and a suitable track or way for same adapted to pass through said open center, and secured by suitable track-hangers to an overhead support, a stop-block secured at or near the upper end of said hangers next to the overhead support, and adapted to engage with the catch on the carrier on both sides of the track, substantially as and for the purposes set forth.

4. In an elevator and carrier in combination with the track or way, a track-hanger adapted to support the track, and formed with extensions or guide-lugs h^2 h^3, at each side to support the stop-block for the carrier, substantially as and for the purposes set forth.

5. The combination of the track T, track-hangers h, h, and stop-block s, of the carrier secured to the upper end of said track-hangers, substantially as and for the purposes set forth.

6. In combination with a suitable track or way, track-hangers adapted to support said

track or way, and a stop or trip block adapted to be attached at or near the top of said track-hangers in position to engage the catch or lock on the carrier, means for adjusting said stop endwise and supporting the same against an endwise strain or pull, substantially as and for the purposes set forth.

7. In combination with the track or way, track-hangers attached thereto, and a stop or trip block attached to said track-hangers, an adjusting wedge or cam adapted to be attached to the ends of said stop-block and to bear against the track-hangers, substantially as and for the purposes set forth.

8. In combination with a suitable track or way, a carrier provided with wheels adapted to travel on both sides of said track or way, and provided with a catch or lock projecting above said track, means to support a stop or trip block in line with the hangers and above the center of said track or way in position to engage said catch on the carrier, and to relieve the track from the usual endwise strain while the load is being elevated, substantially as set forth.

9. In combination with a suitable track or way, track-hangers attached centrally to the same and connected with an overhead support, a carrier provided with an open center between the traveling wheels, and adapted to travel on both sides of said track, a stop-block for said carrier, and means whereby said stop-block may be supported centrally above said carrier and track in such a manner as to throw the strain on said stop up against said overhead support while the load is being elevated, substantially as set forth.

10. In combination with a suitable track or way, a carrier adapted to embrace said track, and provided with traveling wheels adapted to travel on both sides of the same, track-hangers adapted to support the track, and rafter-brackets whereby said hangers may be attached to the rafters, a stop-block adapted to engage the catch on the carrier centrally above the track, and means whereby said stop-block may be supported above the track in such a manner as to throw the endwise strain on said stop up against said rafter-brackets while the load is being elevated, substantially as set forth.

11. In combination with a suitable track or way, a carrier adapted to embrace, and to travel on both sides of said track or way, track-hangers adapted to support said track or way, and a stop-block adapted to engage the catch on said carrier on both sides of the track, means whereby said stop may be connected to said track-hangers centrally above the track, and held in proper position against the endwise strain as the load is being elevated.

12. The combination of the track-hangers formed with guides or extensions on their sides above the track to support the stop in place, a stop-block formed in two parts or plates adapted to be attached to the sides of said hangers, and adjusting wedges or cams adapted to be attached between the ends of said plates of said stop, and to bear against said hangers, substantially as and for the purposes set forth.

13. In combination with a suitable track or way, track-hangers adapted to support said track or way, and a stop-block for the carrier adapted to be attached to said track-hangers, the adjusting wedges or cam *d*, substantially as and for the purposes set forth.

14. The combination of the track-hangers formed with side extensions or lugs h^2, h^3, to form a guideway for and to support the stop, the stop-block *s*, attached thereto, and the adjusting cams or wedge *d*, *d*, substantially as andf or the purposes set forth.

15. In an elevator and carrier, in combination with the catch in the carrier, a stop-block adapted to engage and coact with said catch, and formed with an opening through its center to allow the rafter-brackets or other supports to pass through, substantially as and for the purposes set forth.

16. In an elevator and carrier, in combination with the catch on the carrier, a stop-block adapted to coact with said catch, and formed with upwardly-projecting ends adapted to project up outside of the rafter-brackets on opposite sides of the rafters, substantially as and for the purposes set forth.

17. In an elevator and carrier, in combination with a suitable track or way, and track-hangers for supporting said track or way, a stop or trip block formed of side pieces or plates provided with upper extensions at each end whereby they may be secured at the sides of said track-hangers in position to engage the catch on the carrier, substantially as set forth.

18. In an elevator and carrier, in combination with the catch on the carrier, and the rafter-brackets attached to the rafters and supporting the track-hangers, a stop-block adapted to engage said catch, and cut away through its center to allow said rafter-brackets to pass through, and projecting up at the outer ends outside of said rafter-brackets, and provided with cams or wedges attached to said ends and adapted to bear against the track-hangers and throw the endwise strain on said stop against said rafter-brackets and the rafters while the load is being elevated, substantially as and for the purposes set forth.

19. In combination with the catch on the carrier, a stop-block cut away through the center and formed with upwardly-projecting ends, and provided with lateral retaining-lugs or inclines formed with a lower horizontal extension adapted to hold and guide said catch, substantially as and for the purposes set forth.

20. In an elevator and carrier, in combination with the sides or arms of the carrier-frame, and the wheels for same, means whereby the journals of said wheels may be adjusted endwise to allow the carrier to be run on tracks of different widths, substantially as set forth.

21. In an elevator and carrier, in combination with a traveling wheel and the journal for same formed with a shoulder adapted to abut against a bearing at the upper end of the arm or hanger of the carrier-frame, through which said journal is secured, an annular chamber around said journal, a removable bearing for the shoulder of said journal, and means whereby said journal may be adjusted endwise, substantially as and for the purposes set forth.

22. In an elevator and carrier, in combination with a traveling wheel, and a journal to connect the same with the arm or hanger of the carrier, a chamber formed inside said arm around said journal, and a washer formed with a boss at one side to engage in said chamber, and to form a bearing for the shoulder of said journal at the opposite side, substantially as and for the purposes set forth.

23. The combination of the journal R, arm or hanger *a* formed with a chamber therein, washer S′, formed with a boss or extension at one side, and means for adjusting and holding the parts in position, substantially as and for the purposes set forth.

24. The combination of the journal R, a movable washer or bearing for said journal, the arm or hanger of the carrier-frame, and means for supporting said washer or bearing above said journal against a lifting strain, and for adjusting said journal endwise in the carrier-frame, substantially as and for the purposes set forth.

25. In an elevator and carrier, in combination with a suitable track or way, depending extensions or hangers at each end of the carrier-frame and at each side of said track or way, and a cross-tie passing underneath said track or way and connecting, said depending extensions or hangers, substantially as set forth.

26. In an elevator and carrier, in combination with the sides of the carrier-frame, and a swiveled connection to carry the rope and pulleys, a cross-tie adapted to connect said sides of the carrier-frame at or near their ends, and to form a support for the ends of said swiveled connection for the rope and pulleys, substantially as and for the purposes set forth.

27. In an elevator and carrier, in combination with the sides of the carrier-frame, and a swiveled connection for the rope and pulleys, a cross-tie or end support between the ends of said sides, and an upper extension or support above the pulleys at the ends of said swiveled connection, adapted to bear on said cross-tie or end support and help support the pulleys, substantially as set forth.

28. In an elevator and carrier, in combination with the sides of the carrier-frame and a track or way, a cross-tie or end support adapted to connect said sides at each end, underneath said track, a collar or band swiveled around the lower part of the carrier-frame to carry the rope and pulleys, and means whereby said collar or band may be supported at each end from said cross-tie or end support, substantially as and for the purposes set forth.

29. In an elevator and carrier, in combination with the main sides of the carrier-frame, and a lower frame or collar swiveled around the lower part of said main frame to carry the rope and pulleys, a cross-tie or end support adapted to connect the ends of said main frame and form a support for the ends of said collar or pulley carrying frame, and an upper support above said pulleys adapted to connect with and move along said cross-tie, substantially as and for the purposes set forth.

30. In combination with the main sides of the carrier-frame, and the pulley-carrying frame, the downward extensions or hangers *p*, *p*, cross-ties *t*, *t*, and upper supports or bearings *e*, *e*, adapted to engage with said cross-ties and help support the pulleys, substantially as and for the purposes set forth.

31. In an elevator and carrier and track apparatus, in combination with a suitable track or way, track-hangers adapted to suspend said track comparatively close up to an overhead support, allowing it to swing sidewise and to support the stop-block, a stop-block adapted to be attached to said hangers and to engage the catch on the carrier a carrier adapted to travel on said track or way, and a fork or trip pulley for said carrier provided with a hook or load attaching device adapted to be swung or folded up at one side of said pulley-frame when desired, substantially as and for the purposes set forth.

In testimony whereof I hereby affix my signature, this 17th day of December, 1901, in presence of two subscribing witnesses.

JOHN M. BOYD.

Witnesses:
C. E. HINMAN,
H. J. BISSETT.